

What Is Claimed Is:

1 1. A gate for preventing dopants from penetrating a gate
2 insulator, comprising:
3 a gate insulator disposed on a substrate;
4 a polysilicon layer disposed on the gate insulator; and
5 an amorphous-silicon layer disposed on the polysilicon
6 layer, wherein the gate is composed of the polysilicon layer and
7 the amorphous-silicon layer.

1 2. The gate as claimed in claim 1, wherein the gate insulator
2 is a gate oxide layer.

1 3. The gate as claimed in claim 1, wherein the thickness of
2 the polysilicon layer is 300~1000Å.

1 4. The gate as claimed in claim 3, wherein the thickness of
2 the amorphous-silicon layer is 1000~2000Å.

1 5. A method of forming a gate for preventing dopants from
2 penetrating a gate insulator, comprising:
3 providing a substrate;
4 forming a gate insulator on the substrate;
5 forming a polysilicon layer on the gate insulator;
6 forming an amorphous-silicon layer on the polysilicon
7 layer; and
8 patterning the polysilicon layer and the amorphous-silicon
9 layer to form a gate.

1 6. The method as claimed in claim 5, wherein the gate
2 insulator is a gate oxide layer.

1 7. The method as claimed in claim 5, wherein the thickness
2 of the polysilicon layer is 300~1000Å.

1 8. The method as claimed in claim 7, wherein the method of
2 forming the polysilicon layer comprises using silane as a
3 processing gas to deposit the polysilicon layer under 0.15~0.25
4 torr at 580~630°C.

1 9. The method as claimed in claim 5, wherein the thickness
2 of the amorphous-silicon layer is 1000~2000Å.

1 10. The method as claimed in claim 9, wherein the method of
2 forming the amorphous-silicon layer comprises using silane as
3 a processing gas to deposit the amorphous-silicon layer under
4 0.15~0.25 torr at 510~560°C.

1 11. The method as claimed in claim 5, wherein after the step
2 of patterning the polysilicon layer and the amorphous-silicon
3 layer to form the gate, a source/drain is formed in the substrate
4 beside the gate by ion implantation.

1 12. The method as claimed in claim 11, wherein after
2 performing the ion implanting, an anneal process is performed.

1 13. The method as claimed in claim 11, wherein a dopant used
2 in the ion implanting process is boron ions.

1 14. The method as claimed in claim 13, wherein in the
2 implantation of boron ions, the dosage is $1 \times 10^{15} \sim 1 \times 10^{16} \text{ cm}^{-2}$ and
3 the implant energy is 3~20 keV.

1 15. The method as claimed in claim 11, wherein a dopant used
2 in the ion implanting process is As ions.

1 16. The method as claimed in claim 15, wherein in the
2 implantation of As ions, the dosage is $1 \times 10^{15} \sim 1 \times 10^{16} \text{ cm}^{-2}$ and the
3 implant energy is 30~80 keV.